CONTENTS

No. 1, January 1968

Animal Viruses

Inhibition of Host-Cell Protein and Ribonucleic Acid Synthesis by Newcastle Disease Virus. D. E. Wilson 1
Characterization of the Tumorlike (T) Antigen Induced by Type 12 Adenovirus. I. Purification of the Antigen from Infected KB Cells and a Hamster Tumor Cell Line. Z. Gilead and H. S. Ginsberg 7
Characterization of the Tumorlike (T) Antigen Induced by Type 12 Adenovirus. II. Physical and Chemical Properties. Z. Gilead and H. S. Ginsberg 15
Efficient Filtration and Sizing of Viruses with Membrane Filters. Binie A. Ver, Joseph L. Melnick, and Craig Wallis 21
Protein Synthesis Directed by an Arbovirus. Robert M. Friedman 26
Deoxyribonucleic Acid-dependent Ribonucleic Acid Polymerase Activity in Cells Infected with Influenza Virus. R. Borland and B. W. J. Mahy 33
Relationship of Plaque Size and Virulence for Chickens of 14 Representative Newcastle Disease Virus Strains. G. M. Schloer and R. P. Hanson 40
Herpesvirus Envelopment. Robert W. Darlington and L. Howard Moss III 48
Selection of Morphologically Normal Cell Lines from Polyoma-transformed BHK21/13 Hamster Fibroblasts. G. Marin and J. W. Littlefield 69
Intracellular Herpesvirus Aggregate in the Form of a Pentagonal Dipyramidal Crystal-like Structure. Joseph L. Melnick, Erwin R. Rabin, and A. Bennett Jenson 78
Relation of Interferon Synthesis to Abortive Replication of Newcastle Disease Virus in L Cells. Julius S. Youngner and Anne W. Scott 81
Preparation of Herpes Simplex Virus of High Titer. Bernard Roizman and Patricia G. Spear 83
Interference in Friend Virus Infection In Vitro. Hiroshi Yoshikura, Yasuko Hirokawa, Masa-atsu Yamada, and Haruo Sugano 85

Bacterial Viruses

Ultrastructure of Bacterial Cells Infected with Bacteriophage PM2, a Lipid-containing Bacterial Virus. Eugene Cota-Robles, Romilio Torres Espejo, and Patricia Williams Haywood 56
Bacteriophage Production by Autotrophically Growing *Hydrogenomonas facilis*. Bruce D. Korant and Christine F. Pootjes 87

No. 2, February 1968

Animal Viruses

Enhanced Deoxyribonucleic Acid Polymerase Activity in Human Embryonic Kidney Cultures Infected with Adenovirus 2 or 12. Nada Ledinko 89
Ribonucleic Acid Synthesis in Cells Infected with Influenza Virus. D. P. Nayak and M. A. Baluda 99
Biophysical Studies on Rhinovirus and Poliovirus. I. Morphology of Viral Ribonucleoprotein. Sandy McGregor and Heather D. Mayor 149
Human Adenovirus Type 12 as a "Helper" for Growth of H-1 Virus. Nada Ledinko and Helene W. Toolan 155

Bacterial Viruses

Infection of Competent *Mycobacterium smegmatis* with Deoxyribonucleic Acid Extracted from Bacteriophage B1. Tohru Tokunaga and Reiko M. Nakamura 110
Deoxyribonucleic Acid Replication in λ Bacteriophage Mutants. Lois Ann Salzman and Arthur Weissbach 118

Synthesis of Soluble Ribonucleates in *Escherichia coli* Infected with Bacteriophage R17. JAMES B. HUDSON AND WILLIAM PARANCHYCH 124
Replication of Bacteriophage Ribonucleic Acid: Analysis of the Ultrastructure of the Replicative Form and the Replicative Intermediate of Bacteriophage R17. NICOLE GRANBOULAN AND RICHARD M. FRANKLIN 129
Parental to Progeny Molecular Recombination with Bacteriophage T7. ROBERT C. MILLER, JR 157

NO. 3, MARCH 1968

Animal Viruses

Biophysical and Biochemical Characterization of Lymphocytic Choriomeningitis Virus. IV. Strain Differences. KENNETH P. CAMYRE AND CHARLES J. PFAU 161
Nucleotide Phosphohydrolase in Purified Vaccinia Virus. WILLIAM MUNYON, ENZO PAOLETTI, JULIO OSPINA, AND JAMES T. GRACE, JR 167
Transformation of African Green Monkey Kidney Cells by Irradiated Adenovirus 7-Simian Virus 40 Hybrid. F. JENSEN AND V. DEFENDI 173
Enhancement of St. Louis Arbovirus Plaque Formation by Neutral Red. MARTIN MARCOVICI AND JAMES E. PRIER 178
Effect of Arginine-deficient Media on the Herpes-Type Virus Associated with Cultured Burkitt Tumor Cells. WERNER HENLE AND GERTRUDE HENLE 182
Association of Adenovirus Type 12 Deoxyribonucleic Acid with Host Cell Chromosomes. HARALD ZUR HAUSEN 218
Production of Virus by Mammalian Cells Transformed by Rous Sarcoma and Murine Sarcoma Viruses. ARTRICE F. VALENTINE AND JOHN P. BADER 224
Characteristics of and Relationship Between C Particles and A Particles in Cloned Cell Strains. WILLIAM T. HALL, JANET W. HARTLEY, AND KATHARINE K. SANFORD .. 238
Isolation and Properties of Newcastle Disease Virus Nucleocapsid. D. W. KINGSBURY AND R. W. DARLINGTON 248

Bacterial Viruses

Reversible Repression of Early Enzyme Synthesis in Bacteriophage T4-infected *Escherichia coli*. PAUL S. COHEN 192
Control of Lysis of T4-infected *Escherichia coli*. NANCY L. COUSE 198
Physicochemical and Biological Properties of Fibrous *Pseudomonas* Bacteriophages. Y. MINAMISHIMA, K. TAKEYA, Y. OHNISHI, AND K. AMAKO 208
Primary Adsorption Site of Phage PBS1: the Flagellum of *Bacillus subtilis*. LINDA M. RAIMONDO, NANCY P. LUNDH, AND RAFAEL J. MARTINEZ 256
Bacteriophage T3- and T7-directed Deoxyribonucleases. RUDOLF HAUSMANN AND BEATRIZ GOMEZ 265

Plant Viruses and General

Number of Virus Particles in Insects and Plants Infected with Wound Tumor Virus. GERT STREISSLE, VOJTECH BYSTRICKY, ROBERT R. GRANADOS, AND KARL STROHMAIER 214

NO. 4, APRIL 1968

Animal Viruses

Mechanism of Enhancement of Virus Plaques by Cationic Polymers. CRAIG WALLIS AND JOSEPH L. MELNICK 267
A Mathematical Analysis of Concomitant Virus Replication and Heat Inactivation. D. J. M. PURIFOY, J. A. PURIFOY, AND B. P. SAGIK 275
Antiviral Activity of Antiserum Specific for an Influenza Virus Neuraminidase. E. D. KILBOURNE, W. G. LAVER, J. L. SCHULMAN, AND R. G. WEBSTER 281

Transcription of the Genomes of Type 1 and Type 3 Reoviruses. L. PREVEC, Y. WATANABE, C. J. GAUNNT, AND A. F. GRAHAM 289
Structure and Leukemogenic Activity of a Murine Leukemia Virus. L. DE TKACZEVSKI, E. DE HARVEN, AND C. FRIEND 365
Adenovirus Transformation of Hamster Embryo Cells. BRUCE C. CASTO 376
Herpes Simplex Virus Products in Productive and Abortive Infection. II. Electron Microscopic and Immunological Evidence for Failure of Virus Envelopment as a Cause of Abortive Infection. SUSAN B. SPRING, BERNARD ROIZMAN, AND JEROME SCHWARTZ 384
Ultrastructure of Lymphocystis Virus. LUTZ O. ZWILLENBERG AND KEN WOLF 393

Bacterial Viruses

Replication of T4rII Bacteriophage in *Escherichia coli* K-12 (λ). CLARENCE S. BULLER AND L. ASTRACHAN 298
Number of Polypeptide Components in Bacteriophage T2L Contractile Sheaths. S. A. A. FARID AND L. M. KOZLOFF 308
Host-controlled Restriction of T-even Bacteriophages: Relation of Endonuclease I and T-even-induced Nucleases to Restriction. BRUCE MOLHOLT AND DEAN FRASER 313
Host-controlled Restriction of T-even Bacteriophages: Relation of Four Bacterial Deoxyribonucleases to Restriction. JOSEPH EIGNER AND STEPHEN BLOCK 320
Bacteriophage-induced Inhibition of Host Functions. I. Degradation of *Escherichia coli* Deoxyribonucleic Acid After T4 Infection. RICHARD J. WARREN AND SUBIR K. BOSE 327
Physiological and Genetic Aspects of Abortive Infection of a *Shigella sonnei* Strain by Coliphage T7. R. HAUSMANN, BEATRIZ GOMEZ, AND BEVERLY MOODY 335
Adsorption of Bacteriophages to Adhesions Between Wall and Membrane of *Escherichia coli*. M. E. BAYER 346
Characteristics of Bacteriophages Attacking Psychrophilic and Mesophilic Pseudomonads. R. H. OLSEN, ELEANOR S. METCALF, AND JAMES K. TODD 357

No. 5, MAY 1968

Animal Viruses

Effect of Poxvirus Infection on Host Cell Deoxyribonucleic Acid Synthesis. C. JUNGWIRTH AND J. LAUNER 401
Density Gradient Centrifugation of Rubella Virus. ROBERT M. MCCOMBS AND WILLIAM E. RAWLS 409
Rescue of Temperature-sensitive Poliovirus. F. RICHARD NICHOL AND DANIEL R. TERSHAK 415
Biosynthesis of Host and Viral Deoxyribonucleic Acid During Hyperplastic Fowlpox Infection In Vivo. WILLIAM CHEEVERS, DENNIS J. O'CALLAGHAN, AND CHARLES P. RANDALL 421
Role of Adenovirus Structural Proteins in the Cessation of Host-Cell Biosynthetic Functions. A. J. LEVINE AND H. S. GINSBERG 430
Specific Role of Each Human Leukocyte Type in Viral Infections. II. Phytohemagglutinin-treated Lymphocytes as Host Cells for Vesicular Stomatitis Virus Replication In Vitro. ROBERT EDELMAN AND E. FREDERICK WHEELOCK 440
Soluble Antigens of Vaccinia-infected Mammalian Cells. III. Relation of "Early" and "Late" Proteins to Virus Structure. GARY H. COHEN AND WESLEY C. WILCOX 449
Differentiation of Temperature Variants of Influenza A2 Virus on the Basis of Plaque Formation. T. E. MEDVEDEVA, G. I. ALEXANDROVA, AND A. A. SMORODINSTSEV 456
Mengovirus Replication in Novikoff Rat Hepatoma and Mouse L Cells: Effects on Synthesis of Host-Cell Macromolecules and Virus-specific Synthesis of Ribonucleic Acid. PETER G. W. PLAGEMANN 461
Mechanism of Photoreactivation of Pseudorabies Virus. E. R. PFEFFERKORN AND HELEN M. COADY 474

Hybrid of Monkey and Human Adenoviruses. A. D. ALSTEIN, N. N. DODONOVA, N. N. VASSILYEVA, AND E. M. TSETLIN 488
Hemadsorption of Mumps Virus Examined by Light and Electron Microscopy. HUU DUC-NGUYEN 494
Electron Microscopy of Herpes Simplex Virus. I. Entry. COUNCILMAN MORGAN, HARRY M. ROSE, AND BAIBA MEDNIS 507
Electron Microscopy of Herpes Simplex Virus. II. Sequence of Development. SHIRO NII, COUNCILMAN MORGAN, AND HARRY M. ROSE 517
Replication of Defective Simian Virus 40 and a Monkey Cell-adapting Component in Human Kidney Cells. JANET S. BUTEL AND FRED RAPP 541
Lack of Oncogenic Potential of Measles Virus on Syrian Hamster Embryo Cell Cultures. GEORGE TH. DIAMANDOPOULOS 543

Bacterial Viruses

Chemically Induced Cofactor-Requirement for Bacteriophage T4D. R. I. GAMOW AND L. M. KOZLOFF 480
Bacteriophages of *Clostridium botulinum*. KATSUHIRO INOUE AND HIROO IIDA 537

No. 6, JUNE 1968

Animal Viruses

Replicative Intermediate of an Arbovirus. ROBERT M. FRIEDMAN 547
Mechanism of Resistance to Enteroviruses of Some Primate Cells in Tissue Culture. V. D. SOLOVIEV, T. I. KRISPIN, V. G. ZASLAVSKY, AND V. I. AGOL 553
Replication of Western Equine Encephalomyelitis Virus. I. Some Chemical and Physical Characteristics of Viral Ribonucleic Acid. T. SREEVALSAN, R. Z. LOCKHART, JR., M. L. DODSON, JR., ABD K. A. HARTMAN 558
Destruction of L Cells by Mengo Virus: Use of Interferon to Study the Mechanism. CHARLES J. GAUNTT AND ROYCE Z. LOCKHART, JR. 567
In Vitro Chick Embryo Cell Response to Strain MC29 Avian Leukosis Virus. D. P. BOLOGNESI, A. J. LANGLOIS, L. SVERAK, R. A. BONAR, AND J. W. BEARD 576
Analysis of Simian Virus 40-induced Transformation of Hamster Kidney Tissue In Vitro. V. Variability of Virus Recovery from Cell Clones Inducible with Mitomycin C and Cell Fusion. WILLIAM H. BURNS AND PAUL G. BLACK 606
Herpes Simplex Virus-Host Cell Relationships in Organized Cultures of Mammalian Nerve Tissues. L. A. FELDMAN, R. D. SHEPPARD, AND M. B. BORNSTEIN 621
Isolation and Characterization of Viruses from the Kidneys of *Rana pipiens* with Renal Adenocarcinoma Before and After Passage in the Red Eft (*Triturus viridescens*). H. FRED CLARK, JAMES C. BRENNAN, ROBERT F. ZEIGEL, AND DAVID T. KARZON 629
Effects of Ultraviolet Irradiation on the Transforming and Plaque-forming Capacities of Simian Adenovirus SA7. BRUCE C. CASTO 641
Enhancing Effect of Diethylaminoethyl-Dextran on the Focus-forming Titer of a Murine Sarcoma Virus (Harvey Strain). H. DUC-NGUYEN 643
Growth Inhibition of Newcastle Disease Virus upon Superinfection of Poliovirus in the Presence of Guanidine. YOSHIAKI ITO, HAJIME OKAZAKI, AND NAKAO ISHIDA 645
Induction of Interferon Synthesis by Synthetic Double-stranded Polynucleotides. JAN VILČEK, MUN H. NG, ALVIN E. FRIEDMAN-KIEN, AND TETYANA KRAWCIW .. 648

Bacterial Viruses

Relationship Between Competence for Transfection and for Transformation. SILVANO RIVA AND MARIO POLSINELLI 587
Phospholipid Synthesis in *Escherichia coli* Infected with T4 Bacteriophages. MARJORIE H. FURROW AND LEWIS I. PIZER 594
Disruption of T-even Bacteriophages by Dimethyl Sulfoxide. DONALD J. CUMMINGS, V. A. CHAPMAN, AND S. S. DELONG 610
Bacteriophage Activity in Homogenates of Crown Gall Tissue. C. LOWELL PARSONS AND ROBERT E. BEARDSLEY 651

Homogeneity in a *Staphylococcus aureus* Transducing Fragment. P. A. PATTEE, W. E. KLOOS, J. B. BODENSTEINER, AND A. ZARA 652
Stimulation of φX174 Production in Mitomycin C-treated *Escherichia coli* Cells by Caffeine. HELMUT STEIGER AND ROBERT L. SINSHEIMER 655

No. 7, JULY 1968

Animal Viruses

Demonstration of a Herpes Group Virus in Cultures of Peripheral Leukocytes from Patients with Infectious Mononucleosis. VOLKER DIEHL, GERTRUDE HENLE, WERNER HENLE, AND GERTRUDE KOHN 663
Replication and Complementation of Human Adenoviruses and Simian Papovavirus at an Elevated Temperature. MARYANN JERKOFSKY AND FRED RAPP 670
Initiation of Vaccinia Virus Infection in Actinomycin D-pretreated Cells. WAYNE E. MAGEE AND OLGA V. MILLER 678
Incorporation of Iododeoxyuridine into Cellular Deoxyribonucleic Acid Synthesized After Infection with Simian Virus 40. G. MAASS, H. WERCHAU, G. BRANDNER, AND R. HAAS 723
Maturation Defects in Temperature-sensitive Mutants of Sindbis Virus. FAY H. YIN AND R. Z. LOCKART, JR. 728
Infective Substructures of Sendai Virus from Infected Ehrlich Ascites Tumor Cells. A. G. BUKRINSKAYA, S. M. KLIMENKO, Y. A. SMIRNOV, AND B. V. GUSCHIN 752
Effect of Altered Osmotic Pressure on the Growth of Sindbis Virus. MARILYNN R. F. WAITE AND E. R. PFEFFERKORN 759
Antibody Response in Man to Influenza Virus Neuraminidase Following Influenza. EDWIN D. KILBOURNE, WILLIAM N. CHRISTENSON, AND MERLE SANDE 761

Bacterial Viruses

Transducing Bacteriophage for *Bacillus cereus*. CURTIS B. THORNE 657
Factors Affecting Infection of Protoplasts with Deoxyribonucleic Acid of Actinophage PK-66. MASANORI OKANISHI, KOEI HAMANA, AND HAMAO UMEZAWA 686
T-related Bacteriophages Isolated from *Shigella sonnei*. ROSA H. GROMKOVA 692
Effect of Cyanophage Infection on CO_2 Photoassimilation in *Plectonema boryanum*. DALIA GINZBURG, ETANA PADAN, AND MOSHE SHILO 695
Integration and Induction of Phage P22 in a Recombination-deficient Mutant of *Salmonella typhimurium*. JENNIFER P. WING 702
Mechanisms of Enhancement of SP82 Transfection. H. T. EPSTEIN AND INGA MAHLER 710
Isolation and Characterization of Transducing Bacteriophage BP1 for *Bacterium anitratum* (*Achromobacter* sp.). R. TWAROG AND L. E. BLOUSE 716

Plant and Insect Viruses

Physicochemical Properties of *Tipula* Iridescent Virus. J. KALMAKOFF AND J. H. TREMAINE 738
Application of Scanning Microscopy in the Study of Virus Transmission of Aphids. GUSTAAF A. DE ZOETEN 745

No. 8, AUGUST 1968

Animal Viruses

Effect of *p*H on the Protective Action of Interferon in L Cells. JULES V. HALLUM, JULIUS S. YOUNGNER, AND NANCY J. ARNOLD 772
Protective Effects of Specific Immunity to Viral Neuraminidase on Influenza Virus Infection of Mice. JEROME L. SCHULMAN, MANIJEH KHAKPOUR, AND EDWIN D. KILBOURNE 778
Vaccinia Virus Replication and Cytopathic Effect in Cultures of Phytohemagglutinin-treated Human Peripheral Blood Leukocytes. GEORGE MILLER AND JOHN F. ENDERS 787

Kinetics of Viral Deoxyribonucleic Acid, Protein, and Infectious Particle Production and Alterations in Host Macromolecular Synthesis in Equine Abortion (Herpes) Virus-infected Cells. DENNIS J. O'CALLAGHAN, JAMES M. HYDE, GLENN A. GENTRY, AND CHARLES C. RANDALL 793
Effect of Anticellular Serum on the Attachment of Enteroviruses to HeLa Cells. DAVID A. AXLER AND RICHARD L. CROWELL 813
In Vitro Morphology and Maturation of Lymphocystis Virus. F. H. MIDLIGE, JR., AND R. G. MALSBERGER 830
Purification of Rabies Virus Grown in Tissue Cultures. FRANTISEK SOKOL, ERNEST KUWERT, TADEUSZ J. WIKTOR, KLAUS HUMMELER, AND HILARY KOPROWSKI 836
Helper-dependent Infectious Deoxyribonucleic Acid from Adenovirus-Associated Virus. M. DAVID HOGGAN, AARON J. SHATKIN, NEIL R. BLACKLOW, FRANK KOCZOT, AND JAMES A. ROSE 850

Bacterial Viruses

Cation Fluxes and Permeability Changes Accompanying Bacteriophage Infection of *Escherichia coli*. SIMON SILVER, ELAINE LEVINE, AND PHILIP M. SPIELMAN 763
Productive Infection of *Bacillus subtilis* 168, with Bacteriophage SP-10, Dependent upon Inducing Treatments. IVAN D. GOLDBERG AND THEODORE BRYAN 805
Process of Infection with Bacteriophage ϕX174. XXIV. New Type of Temperature-sensitive Mutant. L. DALGARNO AND ROBERT L. SINSHEIMER 822

No. 9, September 1968

Animal Viruses

Enhancement of Infectivity of Murine Cytomegalovirus In Vitro by Centrifugal Inoculation. J. E. OSBORN AND D. L. WALKER 853
Replication of Mengovirus in HeLa Cells Preinfected with Nonreplicating Poliovirus. WILLIAM MCCORMICK AND SHELDON PENMAN 859
Biological and Serological Properties of Viral Particles from Nonproducer Rat Neoplasm Induced by Murine Sarcoma Virus (Moloney). R. C. TING 865
Reovirus-induced Ribonucleic Acid Polymerase. Y. WATANABE, C. J. GAUNTT, AND A. F. GRAHAM 869
Antiviral Activity of Polyacrylic and Polymethacrylic Acids. I. Mode of Action In Vitro. P. DE SOMER, E. DE CLERCQ, A. BILLIAU, E. SCHONNE, AND M. CLAESEN 878
Antiviral Activity of Polyacrylic and Polymethacrylic Acids. II. Mode of Action In Vivo. P. DE SOMER, E. DE CLERCQ, A. BILLIAU, E. SCHONNE, AND M. CLAESEN 886
Synthesis and Intracellular Localization of Vaccinia Virus Deoxyribonucleic Acid-dependent Ribonucleic Acid Polymerase. J. KATES, R. DAHL, AND M. MIELKE 894
Chromosomal Aberrations and Cloning Efficiency in Adenovirus Type 12-infected Hamster Cells. HARALD ZUR HAUSEN 915
Persistence of the Viral Genome in Adenovirus Type 12-infected Hamster Cells. HARALD ZUR HAUSEN 918
Structure and Development of Viruses as Observed in the Electron Microscope. VIII. Entry of Influenza Virus. COUNCILMAN MORGAN AND HARRY M. ROSE 925
Use of Zonal Ultracentrifuge Systems for Biophysical Studies of Rhinoviruses. JOHN L. GERIN, WARD R. RICHTER, JAMES D. FENTERS, AND JACOB C. HOLPER 937
Early Step in Sendai Virus-mediated Rescue of Rous Sarcoma Virus from Virogenic Mammalian Cells. JAN SVOBODA AND O. MACHALA 951
Stabilization of Enveloped Viruses by Dimethyl Sulfoxide. CRAIG WALLIS AND JOSEPH L. MELNICK 953

Bacterial Viruses

Inactivating and Mutagenic Effects of 1-Methyl-3-Nitro-1-Nitrosoguanidine on Intracellular Bacteriophage. ANTONIO ZAMPIERI, JOSEPH GREENBERG, AND GUYLYN WARREN 901

T4 Bacteriophage Mutants Suppressible by a Missense Suppressor Which Inserts Glycine in Place of Arginine for the Codon AGA. PARLANE REID AND PAUL BERG 905
Chelating Agent Shock of Bacteriophage T5. NOBUTO YAMAMOTO, DEAN FRASER, AND HENRY R. MAHLER 944

NO. 10, OCTOBER 1968

Animal Viruses

Defectiveness of Interferon Production and of Rubella Virus Interference in a Line of African Green Monkey Kidney Cells (Vero). JAN DESMYTER, JOSEPH L. MELNICK, AND WILLIAM E. RAWLS 955
Viral Events Necessary for the Induction of Interferon in Chick Embryo Cells. R. Z. LOCKART, JR., N. LYNN BAYLISS, S. T. TOY, AND FAY HOH YIN 962
Fractionation of Eastern Equine Encephalitis Virus by Density Gradient Centrifugation in CsCl. H. G. AASLESTAD, E. J. HOFFMAN, AND ARTHUR BROWN 972
Herpes Simplex Virus Products in Productive and Abortive Infection. III. Differentiation of Infectious Virus Derived from Nucleus and Cytoplasm with Respect to Stability and Size. SUSAN B. SPRING AND BERNARD ROIZMAN 979
Separation of Ten Reovirus Genome Segments by Polyacrylamide Gel Electrophoresis. A. J. SHATKIN, J. D. SIPE, AND P. LOH 986
Genetic Relatedness Studies with Adenovirus-associated Viruses. JAMES A. ROSE, M. DAVID HOGGAN, FRANK KOCZOT, AND AARON J. SHATKIN 999
Deoxyribonucleic Acid Synthesis in FV-3-infected Mammalian Cells. B. R. MCAUSLAN AND W. R. SMITH 1006
Sequential Protein Synthesis Following Vaccinia Virus Infection. B. MOSS AND N. P. SALZMAN 1016
Inhibition of HeLa Cell Protein Synthesis by the Vaccinia Virion. BERNARD MOSS 1028
Replication of Western Equine Encephalomyelitis Virus. II. Cytoplasmic Structure Involved in the Synthesis and Development of the Virions. T. SREEVALSAN AND P. T. ALLEN 1038
Chromosomal and Autoradiographic Studies of Cells Infected with Herpes Simplex Virus. RAINER WAUBKE, HARALD ZUR HAUSEN, AND WERNER HENLE 1047
Biochemical Studies on Adenovirus Multiplication. XIII. Synthesis of Virus-Specific Ribonucleic Acid During Infection with Human Adenovirus Type 12. STANLEY MAK AND MAURICE GREEN 1055
Virus-Receptor Interaction in an Adenovirus System. LENNART PHILIPSON, KARL LONBERG-HOLM, AND ULF PETTERSSON 1064
Structural and Nonstructural Proteins of an Arbovirus. ROBERT M. FRIEDMAN 1076
Inhibition of Arbovirus Protein Synthesis by Interferon. ROBERT M. FRIEDMAN 1081
Cleavage by Formamide of Intercapsomer Bonds in Adenovirus Types 4 and 7 Virions and Hemagglutinins. A. ROBERT NEURATH, BENJAMIN A. RUBIN, AND JOHN T. STASNY 1086
Target Volume Analysis of Vaccinia Virus: Influence of Virus Dispersion and Noninfectious Particles. GUILLERMO CONTRERAS AND ADELA OHLBAUM 1102
Biophysical, Biological, and Cytochemical Features of a Virus Associated with Transplantable Hamster Tumors. W. A. STENBACK, G. L. VAN HOOSIER, JR., AND J. J. TRENTIN 1115
Structure and Development of Viruses as Observed in the Electron Microscope. IX. Entry of Parainfluenza 1 (Sendai) Virus. COUNCILMAN MORGAN AND CALDERON HOWE 1122
Ultrastructure of the Surfaces of Cells Infected with Avian Leukosis-Sarcoma Viruses. HERBERT R. MORGAN 1133
Effects of X-Irradiated Aqueous Solutions on Vesicular Stomatitis Virus. J. W. HEINE AND G. J. GALASSO 1147
Electron Microscopic Study of the Morphogenesis of Vesicular Stomatitis Virus. A. J. HACKETT, Y. C. ZEE, F. L. SCHAFFER, AND L. TALENS 1154

Electron Microscopy of Herpes Simplex Virus. III. Effect of Hydroxyurea. S. Nii, H. S. Rosenkranz, C. Morgan, and H. M. Rose 1163
Electron Microscopy of Herpes Simplex Virus. IV. Studies with Ferritin-conjugated Antibodies. S. Nii, C. Morgan, H. M. Rose, and K. C. Hsu 1172
Morphology of the Nucleoprotein Component of Rabies Virus. Klaus Hummeler, Natale Tomassini, Frantisek Sokol, Ernst Kuwert, and Hilary Koprowski 1191
omparative Studies on the Soluble Components of Adenovirus Types 9 and 15 and the Intermediate Strain 9-15. Erling Norrby 1200
Electron Microscopy of the Development of Rubella Virus in BHK-21 Cells. Frederick A. Murphy, Pekka E. Halonen, and Alyne K. Harrison 1223
5-Azacytidine as a Mutagen for Arboviruses. Sidney Halle 1228

Bacterial Viruses

Second Locus of Bacteriophage P22 Necessary for the Maintenance of Lysogeny. Michael Gough 992
Evidence for a New Endonuclease Synthesized by λ Bacteriophage. Robert C. Shuster and Arthur Weissbach 1096
Escherichia coli K Bacteriophages. I. Isolation and Introductory Characterization of Five *Escherichia coli* K Bacteriophages. Stephan Stirm 1107
Physical and Biological Properties of Phage φ29 Deoxyribonucleic Acid. D. L. Anderson and E. Tewfik Mosharrafa 1185
Intracellular Fate of Deoxyribonucleic Acid from T7 Bacteriophages. Karin Carlson 1230

Plant and Insect Viruses

Efficiency of Nitrous Acid as an Inactivating and Mutagenic Agent of Intact Tobacco Mosaic Virus and Its Isolated Nucleic Acid. O. P. Sehgal and G. F. Krause .. 966
Double-stranded Ribonucleic Acid from Cytoplasmic Polyhedrosis Virus of the Silkworm. K. Miura, I. Fujii, T. Sakaki, M. Fuke, and S. Kawase 1211

No. 11, November 1968

Animal Viruses

Cellular Origin of a Mouse Leukemia Viral Ribonucleic Acid. R. L. Wollmann and W. H. Kirsten 1241
Transformation by Murine Sarcoma Virus: Fixation (Deoxyribonucleic Acid Synthesis) and Development. Yozo Nakata and John P. Bader 1255
Isolation of Defective Lysogens from Simian Virus 40-transformed Mouse Kidney Cultures. D. R. Dubbs and Saul Kit 1272
Interference Among Group A Arboviruses. Eugene Zebovitz and Arthur Brown ... 1283
Electron Microscopic Observations of Mouse Brain Infected with Bunyamwera Group Arboviruses. Frederick A. Murphy, Alyne K. Harrison, and Theodore Tzianabos 1315
Cytoplasmic Structures Associated with an Arbovirus Infection: Loci of Viral Ribonucleic Acid Synthesis. Philip M. Grimley, Irene K. Berezesky, and Robert M. Friedman 1326
Characterization of Intracellular Ribonucleic Acid Specific for the Murine Sarcoma-Leukemia Virus Complex. Nilambar Biswal, Michael B. Grizzard, Robert M. McCombs, and Matilda Benyesh-Melnick 1346
Structural Proteins of Reoviruses. P. C. Loh and A. J. Shatkin 1353
Interferon Production in Mice by Vesicular Stomatitis Virus. Julius S. Youngner and Gail Wertz 1360

Bacterial Viruses

Origin of Phospholipid in Bacteriophage PM2. Romilio T. Espejo and Eliana S. Canelo 1235
Early Abortive Lysis by Phage BF23 of *Escherichia coli* K-12 Carrying the Colicin Ib Factor. Taizo Nisioka and Haruo Ozeki 1249

Inhibition of Host Protein Synthesis During Infection of *Escherichia coli* by Bacteriophage T4. I. Continued Synthesis of Host Ribonucleic Acid. DAVID KENNELL..... 1262
Replication of Coliphage M-13. I. Effects on Host Cells After Synchronized Infection. LYLE R. BROWN AND C. E. DOWELL..... 1290
Replication of Coliphage M-13. II. Intracellular Deoxyribonucleic Acid Forms Associated with M-13 Infection of Mitomycin C-treated Cells. LYLE R. BROWN AND C. E. DOWELL..... 1296
Host Cell Participation in Small Virus Replication. I. Replication of M-13 in a Strain of *Escherichia coli* with a Temperature-sensitive Lesion in Deoxyribonucleic Acid Synthesis. S. B. PRIMROSE, L. R. BROWN, AND C. E. DOWELL..... 1308
Effect of Prophage W on the Propagation of Bacteriophages T2 and T4. LEWIS I. PIZER, HELENE S. SMITH, MARGARET MIOVIC, AND LAIRD PYLKAS..... 1339

NO. 12, DECEMBER 1968

Animal Viruses

Induction of Poxvirus Ribonucleic Acid Polymerases. A. PITKANEN, B. MCAUSLAN, J. HEDGPETH, AND B. WOODSON..... 1363
Base-Sequence Homology Among Some Cytoplasmic Deoxyriboviruses of Vertebrate and Invertebrate Animals. ALAN J. D. BELLETT AND FRANK FENNER..... 1374
Hemagglutination by Rabies Virus. ERNST KUWERT, TADEUSZ J. WIKTOR, FRANTISEK SOKOL, AND HILARY KOPROWSKI..... 1381
Viral and Host Deoxyribonucleic Acid Synthesis in Shope Fibroma Virus-infected Cells as Studied by Means of High-Resolution Autoradiography. RAOUL SCHERRER.. 1418
Effect of Formamide on the Capsid Morphology of Adenovirus Types 4 and 7. JOHN T. STASNY, A. ROBERT NEURATH, AND B. A. RUBIN..... 1429
Electron Microscopic Localization of Herpesvirus-type Particles in Marek's Disease. MUMTAZ AHMED AND GEORGE SCHIDLOVSKY..... 1443
Labile Coat: Reason for Noninfectious Cell-free Varicella-Zoster Virus in Culture. MARGERY L. COOK AND JACK G. STEVENS..... 1458
Morphological and Cytochemical Studies on Lymphocytic Choriomeningitis Virus. ALBERT J. DALTON, W. P. ROWE, G. H. SMITH, R. E. WILSNACK, AND W. E. PUGH. 1465
Viral Inactivation by Disulfide Bond Reducing Agents. DAVID H. CARVER AND DEXTER S. Y. SETO..... 1482

Bacterial Viruses

Loss of Host-controlled Restriction of λ Bacteriophage in *Escherichia coli* Following Methionine Deprivation. ROBERT J. GRASSO AND KENNETH PAIGEN..... 1368
Conditional Cold-sensitive Restriction of *Pseudomonas* Bacteriophage CB3. R. H. OLSEN, ELEANOR S. METCALF, AND CARL BRANDT..... 1393
Effect of Infection with Ribonucleic Acid Bacteriophage R23 on the Inducible Synthesis of β-Galactosidase in *Escherichia coli*. HIROKO WATANABE AND MAMORU WATANABE..... 1400
Multiplication of Bacteriophage P1 Mutants in *Shigella dysenteriae* Strain Sh(1). J. R. CHRISTENSEN..... 1408
Crystalline Aggregates of a Bacteriophage in *Lactobacillus plantarum*. MERCEDES R. EDWARDS AND JOSEPH P. BROWN..... 1479
Use of Trypsin to Increase Bacteriophage Yield and to Facilitate the Isolation of Bacteriophage-resistant Mutants. J. M. GOEPFERT AND W. M. SPIRA..... 1485

Scientific Writing for Graduate Students

A MANUAL ON THE TEACHING OF SCIENTIFIC WRITING

Edited by F. PETER WOODFORD, The Rockefeller University

A Council of Biology Editors Manual

Prepared by the CBE Committee on Graduate Training in Scientific Writing

---

FROM THE PREFACE

This book has been written because the members of the Council of Biology Editors, like all editors of scientific journals, are acutely aware that many scientists write badly. . . . Although the reasons may be complex, one contributing factor seems clear: few universities provide formal training in scientific writing, and few even encourage their students to develop a rational technique for writing scientific papers through the study of any of the excellent available textbooks. . . .

The considerations involved in this kind of writing . . . necessitate hard thinking about the requirements of scientific proof, the logical development of scientific argument, and precision of scientific expression. For these reasons we believe that the instruction is most effectively given at a late stage of a scientist's training—in graduate school—and that it is best given by a scientist.

. . . the manual is intended primarily for use by the *teacher* of scientific writing, and is therefore different in purpose from the many textbooks . . . that are meant to be used by the student himself. Nevertheless, sufficiently motivated students will be able to use this manual directly if no instructor is available.

192 *pages* 6 x 9 *cloth* $5.75
Tables, examples, assignments
Publication: October 1968
The Rockefeller University Press, New York 10021

INDEX TO DATE OF ISSUE

Month	Date of Issue	Pages
January	1/31/68	1–88
February	2/27/68	89–160
March	3/30/68	161–266
April	4/26/68	267–400
May	5/22/68	401–546
June	6/28/68	547–656
July	7/24/68	657–762
August	8/23/68	763–851
September	9/23/68	852–954
October	10/28/68	955–1234
November	11/21/68	1235–1362
December	12/19/68	1363–1487

Statement of Ownership, Management and Circulation required by the Act of October 23, 1962; Section 4369, Title 39, United States Code.

1. *Date of Filing:* 30 September 1968.
2. *Title of Publication:* Journal of Virology.
3. *Frequency of Issue:* Monthly.
4. *Location of known Office of Publication:* Mount Royal and Guilford Aves., Baltimore, Maryland 21202
5. *Location of the Headquarters or General Business Offices of Publisher:* 4715 Cordell Ave., Bethesda, Maryland 20014.
6. *Publisher:* American Society for Microbiology, 4715 Cordell Ave., Bethesda, Maryland 20014.
   Editor: Robert R. Wagner, School of Medicine, University of Virginia, Charlottesville, Virginia 22901
   Managing Editor: Robert A. Day, 4011 Rickover Road, Silver Spring, Maryland 20902
7. *Owners:* (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual, must be given.) American Society for Microbiology, 4715 Cordell Ave., Bethesda, Maryland 20014.
8. *Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities are:* None
9. For completion by nonprofit organizations authorized to mail at special rates (*section 132.122, Postal Manual*): The purpose, function, and nonprofit status of this organization and the exempt status for Federal income tax purposes *have not changed during preceding 12 months.*

	(a)*	(b)†
10. A. Total No. Copies Printed (Net Press Run)	4689	5111
B. Paid Circulation		
1. Sales Through Dealers and Carriers, Street Vendors and Counter Sales	none	none
2. Mail Subscriptions	3981	4718
C. Total Paid Circulation	3981	4718
D. Free Distribution (including samples) By Mail, Carrier or Other Means	37	39
E. Total Distribution (sum of C and D)	4018	4757
F. Office Use, Left-Over, Unaccounted, Spoiled After Printing	671	354
G. Total (Sum of E & F—should equal net press run shown in A)	4689	5111

* Average number of copies for each issue during preceding 12 months.
† Single issue nearest to filing date.
‡ I certify that the statements made by me above are correct and complete. (Signed) Robert A. Day, Managing Editor.

JOURNAL OF VIROLOGY, Dec. 1968, p. i–iii
Copyright © 1968 American Society for Microbiology
Vol. 2, No. 12
Printed in U.S.A.

AUTHOR INDEX

Aaslestad, H. G., 972
Agol, V. I., 553
Ahmed, Mumtaz, 1443
Alexandrova, G. I., 456
Allen, P. T., 1038
Altstein, A. D., 488
Amako, K., 208
Anderson, D. L., 1185
Arnold, Nancy J., 772
Astrachan, L., 298
Axler, David A., 813

Bader, John P., 224, 1255
Baluda, M. A., 99
Bayer, M. E., 346
Bayliss, N. Lynn, 962
Beard, J. W., 576
Beardsley, Robert E., 651
Bellett, Alan J. D., 1374
Benyesh-Melnick, Matilda, 1346
Berezesky, Irene K., 1326
Berg, Paul, 905
Billiau, A., 878, 886
Biswal, Nilambar, 1346
Black, Paul H., 606
Blacklow, Neil R., 850
Block, Stephen, 320
Blouse, L. E., 716
Bodensteiner, J. B., 652
Bolognesi, D. P., 576
Bonar, R. A., 576
Borland, R., 33
Bornstein, M. B., 621
Bose, Subir K., 327
Brandner, G., 723
Brandt, Carl, 1393
Brennan, James C., 629
Brown, Arthur, 972, 1283
Brown, Joseph P., 1479
Brown, Lyle R., 1290, 1296, 1308
Bryan, Theodore, 805
Bukrinskaya, A. G., 752
Buller, Clarence S., 298
Burns, William H., 606
Butel, Janet S., 541
Bystricky, Vojtech, 214

Camyre, Kenneth P., 161
Canelo, Eliana S., 1235
Carlson, Karin, 1230
Carver, David H., 1482
Caso, Bruce C., 376, 641
Chapman, V. A., 610
Cheevers, William, 421
Christensen, J. R., 1408
Christenson, William N., 761
Claesen, M., 878, 886
Clark, H. Fred, 629
Coady, Helen M., 474
Cohen, Gary H., 449
Cohen, Paul S., 192
Contreras, Guillermo, 1102
Cook, Margery L., 1458
Cota-Robles, Eugene, 56
Couse, Nancy L., 198
Crowell, Richard L., 813
Cummings, Donald J., 610

Dahl, R., 894
Dalgarno, L., 822
Dalton, Albert J., 1465
Darlington, Robert W., 48, 248
De Clercq, E., 878, 886
Defendi, V., 173
de Harven, E., 365
DeLong, S. S., 610
De Somer, P., 878, 886
Desmyter, Jan, 955
de Tkaczevski, L., 365
de Zoeten, Gustaaf A., 745
Diamandopoulos, George Th., 543
Diehl, Volker, 663
Dodonova, N. N., 488
Dodson, M. L., Jr., 558
Dowell, C. E., 1290, 1296, 1308
Dubbs, D. R., 1272
Duc-Nguyen, Huu, 494, 643

Edelman, Robert, 440
Edwards, Mercedes R., 1479
Eigner, Joseph, 320
Enders, John F., 787
Epstein, H. T., 710
Espejo, Romilio T., 56, 1235

Farid, S. A. A., 308
Feldman, L. A., 621
Fenner, Frank, 1374
Fenters, James D., 937
Franklin, Richard M., 129
Fraser, Dean, 313, 944
Friedman, Robert M., 26, 547, 1078, 1081, 1326
Friedman-Kien, Alvin E., 648
Friend, C., 365
Fujii, I., 1211
Fuke, M., 1211
Furrow, Marjorie H., 594

Galasso, G. J., 1147
Gamow, R. I., 480
Gauntt, Charles J., 289, 567, 869
Gentry, Glenn A., 793
Gerin, John L., 937
Gilead, Z., 7, 15
Ginsberg, H. S., 7, 15, 430
Ginzburg, Dalia, 695
Goepfert, J. M., 1485
Goldberg, Ivan D., 805
Gomez, Beatriz, 265, 335
Gough, Michael, 992
Grace, James T., Jr., 167
Graham, A. F., 289, 869
Granados, Robert R., 214
Granboulan, Nicole, 129
Grasso, Robert J., 1368
Green, Maurice, 1055
Greenberg, Joseph, 901
Grimley, Philip M., 1326
Grizzard, Michael B., 1346
Gromkova, Rosa H., 692
Guschin, B. V., 752

Haas, R., 723
Hackett, A. J., 1154
Hall, William T., 238
Halle, Sidney, 1228
Hallum, Jules V., 772
Halonen, Pekka E., 1223
Hamana, Koei, 686
Hanson, R. P., 40
Harrison, Alyne K., 1223, 1315
Hartley, Janet W., 238
Hartman, K. A., 558
Hausmann, Rudolf, 265, 335
Haywood, Patricia Williams, 56
Hedgpeth, J., 1363
Heine, J. W., 1147
Henle, Gertrude, 182, 663
Henle, Werner, 182, 663, 1047
Hirokawa, Yasuko, 85
Hoffman, E. J., 972
Hoggan, M. David, 850, 999
Holper, Jacob C., 937
Howe, Calderon, 1122
Hsu, K. C., 1172
Hudson, James B., 124
Hummeler, Klaus, 836
Hyde, James M., 793

Iida, Hiroo, 537
Inoue, Katsuhiro, 537
Ishida, Nakao, 645
Ito, Yoshiaki, 645

Jensen, F., 173
Jenson, A. Bennett, 78
Jerkofsky, Maryann, 670
Jungwirth, C., 401

Kalmakoff, J., 738
Karson, David T., 629
Kates, J., 894
Kawase, S., 1211
Kennell, David, 1262
Khakpour, Manijeh, 778
Kilbourne, Edwin D., 281, 761, 778
Kingsbury, D. W., 248

Kirsten, W. H., 1241
Kit, Saul, 1272
Klimenko, S. M., 752
Kloos, W. E., 652
Koczot, Frank, 850, 999
Kohn, Gertrude, 663
Koprowski, Hilary, 836, 1191, 1381
Korant, Bruce D., 87
Kozloff, L. M., 308, 480
Krause, G. F., 966
Krawciw, Tetyana, 648
Krispin, T. I., 553
Kuwert, Ernest, 836, 1191, 1381

Langlois, A. J., 576
Launer, J., 401
Laver, W. G., 281
Ledinko, Nada, 89, 155
Levine, A. J., 430
Levine, Elaine, 763
Littlefield, J. W., 69
Lockhart, Royce Z., Jr., 558, 567, 728, 962
Loh, P. C., 986, 1353
Lonberg-Holm, Karl, 1064
Lundh, Nancy P., 256

Maass, G., 723
McAuslan, B. R., 1006, 1363
McCombs, Robert M., 409, 1346
McCormick, William 859
McGregor, Sandy, 149
Machala, O., 951
Magee, Wayne E., 678
Mahler, Henry R., 944
Mahler, Inga, 710
Mahy, B. W. J., 33
Mak, Stanley, 1055
Malsberger, R. G., 830
Marcovici, Martin, 178
Marin, G., 69
Martinez, Rafael J., 256
Mayor, Heather D., 149
Mednis, Baiba, 507
Medvedeva, T. E., 456
Melnick, Joseph L., 21, 78, 267, 953, 955
Metcalf, Eleanor S., 357, 1393
Midlige, F. H., Jr., 830
Mielke, M., 894
Miller, George, 787
Miller, Olga V., 678
Miller, Robert C., Jr., 157
Minamishima, Y., 208
Miovic, Margaret, 1339
Miura, K., 1211
Molholt, Bruce, 313
Moody, Beverly, 335
Morgan, Councilman, 507, 517, 925, 1122, 1163, 1172
Morgan, Herbert R., 1133
Mosharrafa, E. Tewfik, 1185
Moss, Bernard, 1028
Moss, L. Howard, III, 48
Munyon, William, 167
Murphy, Frederick A., 1223, 1315

Nakamura, Reiko M., 110
Nakata, Yozo, 1255
Nayak, D. P., 99
Neurath, A. Robert, 1086, 1429
Ng, Mun H., 648
Nichol, F. Richard, 415
Nii, Shiro, 517, 1163, 1172
Nisioka, Taizo, 1249
Norrby, Erling, 1200

O'Callaghan, Dennis J., 421, 793
Ohlbaum, Adela, 1102
Ohnishi, Y., 208
Okanishi, Masanori, 686
Okazaki, Hajime, 645
Olsen, R. H., 357, 1393
Osborn, J. E., 853
Ospina, Julio, 167
Ozeki, Haruo, 1249

Paigen, Kenneth, 1368
Paoletti, Enzo, 167
Padan, Etana, 695
Paranchych, William, 124
Parsons, C. Lowell, 651
Pattee, P. A., 652
Penman, Sheldon, 859
Pettersson, Ulf, 1064
Pfau, Charles J., 161
Pfefferkorn, E. R., 474, 759
Philipson, Lennart, 1064
Pitkanen, A., 1363
Pizer, Lewis I., 594, 1339
Plagemann, Peter G. W., 461
Polsinelli, Mario, 587
Pootjes, Christine F., 87
Prevec, L., 289
Prier, James E., 178
Primrose, S. B., 1308
Pugh, W. E., 1465
Purifoy, D. J. M., 275
Purifoy, J. A., 275
Pylkas, Laird, 1339

Rabin, Erwin R., 78
Raimondo, Linda M., 256
Randall, Charles C., 421, 793
Rapp, Fred, 541, 670
Rawls, William E., 409, 955
Reid, Parlane, 905
Richter, Ward R., 937
Riva, Silvano, 587
Roizman, Bernard, 83, 384, 979
Rose, Harry M., 507, 517, 925, 1163, 1172
Rose, James A., 850, 999
Rosenkranz, H. S., 1163
Rowe, W. P., 1465
Rubin, Benjamin A., 1086, 1429

Sagik, B. P., 275
Sakaki, T., 1211
Salzman, Lois Ann, 118
Salzman, N. P., 1016
Sande, Merle, 761
Sanford, Katharine K., 238
Schaffer, F. L., 1154
Scherrer, Raoul, 1418
Schidlovsky, George, 1443
Schloer, G. M., 40
Schonne, E., 878, 886
Schulman, Jerome L., 281, 778
Schwartz, Jerome, 384
Scott, Anne W., 81
Sehgal, O. P., 966
Seto, Dexter S. Y., 1482
Shatkin, Aaron J., 850, 986, 999, 1353
Sheppard, R. D., 621
Shilo, Moshe, 695
Shuster, Robert C., 992
Silver, Simon, 763
Sinsheimer, Robert L., 655, 822
Sipe, J. D., 986
Smirnov, Y. A., 752
Smith, G. H., 1478
Smith, Helene S., 1339
Smith, W. R., 1006
Smorodintsev, A. A., 456
Sokol, Frantisek, 836, 1191, 1381
Soloviev, V. D., 553
Spear, Patricia G., 83
Spielman, Philip M., 763
Spira, W. M., 1485
Spring, Susan B., 384, 979
Sreevalsan, T., 558, 1038
Stasny, John T., 1086, 1429
Steiger, Helmut, 655
Stenback, W. A., 1115
Stevens, Jack G. ,1458
Stirm, Stephan, 1107
Streissle, Gert, 214
Strohmaier, Karl, 214
Sugano, Haruo, 85
Sverak, L., 576
Svoboda, Jan, 951

Takeya, K., 208
Talens, L., 1154
Tershak, Daniel R., 415
Thorne, Curtis B., 657
Ting, R. C., 865
Todd, James K., 357
Tokunaga, Tohru, 110
Tomassini, Natale, 1191
Toolan, Helene W., 155
Toy, S. T., 962
Tremaine, J. H., 738
Trentin, J. J., 1115
Tsetlin, E. M., 488
Twarog, R., 716
Tzianabos, Theodore, 1315

Umezawa, Hamao, 686

Valentine, Artrice F., 224
Van Hoosier, G. L., Jr., 1115

Vassilyeva, N. N., 488
Ver, Binie A., 21
Vilček, Jan, 648

Walker, D. L., 853
Wallis, Craig, 21, 267, 953
Waite, Marilynn R. F., 759
Warren, Guylyn, 901
Warren, Richard J., 327
Watanabe, Hiroko, 1400
Watanabe, Mamoru, 1400
Watanabe, Y., 289, 869
Waubke, Rainer, 1047
Webster, R. G., 281
Weissbach, Arthur, 118, 1096
Werchau, H., 723
Wertz, Gail, 1360
Wheelock, E. Frederick, 440
Wiktor, Tadeusz J., 836, 1381
Wilcox, Wesley C., 449
Wilsnack, R. E., 1465
Wilson, D. E., 1
Wing, Jennifer P., 702
Wolf, Ken, 393
Wollmann, R. L., 1241
Woodson, B., 1363

Yamada, Masa-atsu, 85
Yamamoto, Nobuto, 944
Yin, Fay H., 728, 962
Yoshikura, Hiroshi, 85
Youngner, Julius S., 81, 772, 1360

Zampieri, Antonio, 901
Zara, A., 652
Zaslavsky, V. G., 553
Zebovitz, Eugene, 1283
Zee, Y. C., 1154
Zeigel, Robert F., 629
zur Hausen, Harald, 218, 915, 918, 1047
Zwillenberg, Lutz O., 393

JOURNAL OF VIROLOGY, Dec. 1968, p. iv–x
Vol. 2, No. 12
Copyright © 1968 American Society for Microbiology
Printed in U.S.A.

SUBJECT INDEX

A particles, relation to C particles, 238
abortive infection, failure of virus envelopment as cause of, 384
abortive infection of *Shigella sonnei* by coliphage T7, 335
abortive lysis by bacteriophage BF23, 1249
actinomycin D-pretreated cells, effect on vaccinia virus infection, 678
actinophage PK-66, infection of protoplasts with deoxyribonucleic acid of, 686
adenocarcinoma, renal, in *Rana pipiens*, 629
adenovirus, induction of tumorlike antigen by, 7, 15
adenovirus-associated virus, helper-dependent infectious deoxyribonucleic acid from 850
adenovirus-associated viruses, genetic relatedness, 999
adenovirus deoxyribonucleic acid, association with host cell chromosomes, 218
adenovirus helper, in adenovirus-associated virus replicative cycle, 850
adenovirus hybrid, 488
adenovirus-infected kidney cultures, deoxyribonucleic acid polymerase activity in, 89
adenovirus multiplication, biochemical studies, 1055
adenovirus-receptors, specificity of interaction, location, 1064
adenovirus-simian virus hybrid, 173
adenovirus structural proteins, role in host biosynthetic functions, 430
adenovirus transformation of hamster embryo cells, 376
adenovirus type 12 as helper for H-1 virus, 155
adenovirus type 12-infected hamster cells, chromosomal aberrations, 915
adenovirus type 12-infected hamster cells, viral genome persistence in, 918
adenovirus types 4 and 7, effect on formamide on capsids, 1429
adenovirus types 4 and 7 virions, cleavage by formamide, 1086
adenovirus types 9, 15, and 9–15, soluble components, 1200
Agrobacterium tumefaciens, bacteriophage activity in, 651
9-aminoacridine, effect on *Escherichia coli* lysis, 198
antibody, specific for viral neuraminidase, 778
anticellular serum, effect on enterovirus attachment to HeLa cells, 813
antigen, adenovirus-induced, 7, 15
antigenic alterations in cells, herpes simplex virus-induced, 1172
antigens of vaccinia-infected cells, 449
antineuraminidase, production by natural infection, 761
antiviral activity of antiserum specific for influenza virus neuraminidase, 281
antiviral activity of polyanions, 878, 886
aphids, plant virus transmission by, 745
arbovirus, protein synthesis directed by, 26
arbovirus, structural and nonstructural proteins of, 1076
arbovirus protein synthesis, inhibition by interferon, 1081
arboviruses, Bunyamwera group, mouse brain infected with, 1315
arboviruses, group A, interference among, 1783
avian leukosis-sarcoma virus-infected cells, ultrastructure of surfaces, 1133
arginine-deficient media, effect on herpesvirus, 182
avian leukosis virus, strain MC29, cell alteration by, 576
5-azacytidine, mutagen for arboviruses, 1228

Bacillus cereus, bacteriophage for, transducing, 657
Bacillus subtilis, adsorption of PBS1 to, 256
Bacillus subtilis, competence for transformation and transfection, 587
Bacillus subtilis 68, resistance to bacteriophage SP-10, 805
Bacillus subtilis ϕ29 deoxyribonucleic acid, properties of, 1185
bacteriophage, fibrous, of *Pseudomonas*, 208
λ bacteriophage, in *Escherichia coli*, methionine deprivation, 1368
bacteriophage, intracellular, 1-methyl-3-nitro-1-nitrosoguanidine effect on, 901
λ bacteriophage, production of parental species I λ deoxyribonucleic acid by, 1096
bacteriophage, transducing, for *Bacillus cereus*, 657
bacteriophage activity in homogenates of crown gall tissue, 651
bacteriophage B1, infection of *Mycobacterium smegmatis* with deoxyribonucleic acid from, 110
bacteriophage BF23, early abortive lysis by, 1249
bacteriophage BP1, isolated against *Bacterium anitratum*, 716
bacteriophage CB3, growth restriction on *Pseudomonas aeruginosa*, 1393
bacteriophage deoxyribonucleic acid, intracellular fate of, 1230
bacteriophage ϕ29 deoxyribonucleic acid, properties of, 1185
bacteriophage-directed deoxyribonucleases, 265
bacteriophage-induced leakage, in infected *Escherichia coli*, 763
bacteriophage lambda mutants, deoxyribonucleic acid replication in, 118
bacteriophage M-13, synchronized infection, 1290
bacteriophage P1 cl mutants, interaction with Sh(P1), 1408
bacteriophage P1 mutants, multiplication in *Shigella dysenteriae*, 1408
bacteriophage P22, second locus of, 992
bacteriophage PBS1, adsorption site of, 256
bacteriophage PM2, origin of phospholipid in, 1235
bacteriophage PM2, ultrastructure of cells infected with, 56
bacteriophage R17, infection of *Escherichia coli* with, 124
bacteriophage R23, effect on β-galactosidase synthesis, 1400

bacteriophage replication by *Hydrogenomonas facilis*, 87
bacteriophage ribonucleic acid, replication of, 129
bacteriophage SP-10, *Bacillus subtilis* resistance to, 805
bacteriophage SP82 transfection, in *Bacillus subtilis*, 710
bacteriophage T2 and T4, effect of prophage W on propagation of, 1339
bacteriophage T2L contractile sheaths, polypeptides in, 308
bacteriophage T4, effect on phospholipid synthesis in *Escherichia coli*, 594
bacteriophage T4-infected *Escherichia coli*, 192, 198
bacteriophage T4 infection, degradation of *Escherichia coli* deoxyribonucleic acid after, 327
bacteriophage T4 infection of *Escherichia coli*, 1262
bacteriophage T4 mutants, suppressible, 905
bacteriophage T4D, cofactor requirement for, 480
bacteriophage T4rII, replication in *Escherichia coli* K-12 (λ), 298
bacteriophage T5, chelating agent shock of, 944
bacteriophage T7, parental to progeny recombination with, 157
bacteriophage φX174, temperature-sensitive mutant of, 822
bacteriophage yield, effect of trypsin, 1485
bacteriophages, adsorption to *Escherichia coli*, 346
bacteriophages, T-even, disruption by dimethyl sulfoxide, 610
bacteriophages, T-even, host-controlled restriction of, 313, 320
bacteriophages, T-related, from *Shigella sonnei*, 692
bacteriophages attacking pseudomonads, 357
bacteriophages of *Clostridium botulinum*, 537
bacteriophages of *Escherichia coli* K, isolation of, 1107
Bacterium anitratum (*Achromobacter* sp.), transducing bacteriophage BP1 for, 716
base-sequence homology, among deoxyriboviruses, 1374
Bunyamwera group arboviruses, mouse brain infected with, electron microscopy, 1315
Burkitt tumor cells, herpesvirus associated with, 182

C particles, relation to A particles, 238
cationic polymers, enhancement of virus plaques by, 267
cell line L-41, resistance to enteroviruses, 553
cell line M10-45-2, resistance to enteroviruses, 553
centrifugal inoculation of murine cytomegalovirus, 853
chelating agent shock of bacteriophage T5, 944
chick embryo cells, response to strain MC29 avian leukosis virus, 576
chromosomal aberrations in infected hamster cells, 915
chromosomes, association of adenovirus deoxyribonucleic acid with, 218
cloned cell strains, intracisternal particles in, 238
clones, recovery of infectious simian virus 40 from, 606
cloning efficiency of adenovirus type 12-infected cells, 915
Clostridium botulinum, bacteriophages of, 537
CO_2 photoassimilation, in *Plectonema boryanum*, 695
cofactor requirement for bacteriophage T4D, 480
colicin Ib factor, in *Escherichia coli* K-12, 1249
coliphage M-13, replication of, 1290, 1296, 1308
coliphage M-13 infection, effect on growth rate and cell size, 1290
coliphage sensitivity to 1-methyl-3-nitro-1-nitrosoguanidine, 901
coliphage T7, abortive infection of *Shigella sonnei*, 335
components of adenovirus 9, 15, and 9–15, 1200
crown gall tumor tissue, bacteriophage activity in, 651
crystalline arrays of phage particles in *Lactobacillus plantarium*, 1479
CsCl density gradient, distribution of Eastern equine encephalitis virus in, 972
cyanophage, effect of infection on CO_2 photoassimilation, 695
cytomegalovirus, murine, enhancement of infectivity, 853
cytoplasmic polyhedra, fibrous nucleic acid from, 1211
cytoplasmic structure, role in development of Western equine encephalomyelitis virus, 1038
cytoplasmic structures, type I cytopathic vacuoles, 1362

defective prophage, role in *Bacillus subtilis* resistance to phage SP-10, 805
density gradient centrifugation of rubella virus, 409
deoxyribonucleases, bacteriophage-directed, 265
deoxyribonucleases, host-controlled restriction of, 320
deoxyribonucleic acid, adenovirus, association with host cell chromosomes, 218
deoxyribonucleic acid, effect of poxvirus infection on, 401
deoxyribonucleic acid, synthesis of cellular, induced by simian virus 40, 723
deoxyribonucleic acid and chromosomes, interactions in herpes virus-infected cells, 1047
deoxyribonucleic acid-dependent ribonucleic acid polymerase activity, 33
deoxyribonucleic acid from phage B1, infection of *Mycobacterium smegmatis* with, 110
deoxyribonucleic acid from phage SPP1, 587
deoxyribonucleic acid of host, degradation after T4 infection, 327
deoxyribonucleic acid polymerase activity in virus-infected cultures, 89
deoxyribonucleic acid replication in λ phage mutants, 118
deoxyribonucleic acid synthesis, *Escherichia coli* with a temperature-sensitive lesion in, M-13 replication in, 1308
deoxyribonucleic acid synthesis, role in fixation of viral genome, 1255
deoxyribonucleic acid synthesis, in frog virus 3-infected cells, 1006
deoxyribonucleic acid synthesis, thermosensitive lesion, M-13 replication in *Escherichia coli* with, 1308
deoxyribonucleic acid synthesis, viral, during adenovirus type 12 infection, 1055
deoxyribonucleic acid synthesis during fowlpox infection, 421

deoxyribonucleic acid synthesis in Shope fibroma virus-infected cells, 1418
deoxyriboviruses, cytoplasmic, base-sequence homology, 1374
diethylaminoethyl-dextran, enhancement of focus-forming titer of a murine sarcoma virus by, 643
dimethyl sulfoxide, disruption of bacteriophages by, 610
dimethyl sulfoxide stabilization of enveloped viruses, 953
disruption of bacteriophages, by dimethyl sulfoxide, 610
disulfide bond reduction, role in viral inactivation, 1482
dithiothreitol, in studies of viral inactivation, 1482

Eastern equine encephalitis virus, fractionation of, 972
EB virus, in cultures from mononucleosis patients 663
Ehrlich ascites tumor cells, infective substructures of Sendai virus, 752
electron microscopy of herpes simplex virus, 507, 517
electron microscopy of virus development, 1122
endonuclease, relation to bacteriophage restriction, 313, 320
endonuclease synthesized by λ bacteriophage, 1096
enhancement, SP82 bacteriophage deoxyribonucleic acid transfection, 710
enterovirus infection, anticellular serum in inhibition of, 813
enterovirus-resistant cell lines, 553
enveloped viruses, stabilization by dimethyl sulfoxide, 953
envelopment of herpesvirus, 48
enzyme synthesis in T4-infected *Escherichia coli*, 192
epithelial neoplasm (MSB-1), virus-released by, 865
equine abortion virus infection, cellular macromolecular synthesis in, 793
Escherichia coli, adsorption of bacteriophage to, 346
Escherichia coli, bacteriophage infection in, 763
Escherichia coli, bacteriophage T4-infected, 192, 198, 1262
Escherichia coli, β-galactosidase synthesis in, 1400
Escherichia coli, M-13 replication in, 1290, 1296, 1308
Escherichia coli, mitomycin C-treated, φX174 production in, 655
Escherichia coli, production of new phage endonuclease in, 1096
Escherichia coli, synthesis of soluble ribonucleates in, 124
Escherichia coli, T4-infected, phospholipid synthesis in, 594
Escherichia coli deoxyribonucleic acid, degradation after T4 infection, 327
Escherichia coli K-12, bacteriophage BF23 in, 1249
Escherichia coli K-12 (λ), bacteriophage replication in, 298
Escherichia coli K-12, mutant strain, special-cell growth, 1368
Escherichia coli K bacteriophages, isolation of, 1107
Escherichia coli W, bacteriophage ω present in, 1339

ferritin-conjugated antibodies, virus-infected cells with, 1172
fibrous nucleic acid from cytoplasmic polyhedra, properties of, 1211
fibrous *Pseudomonas* bacteriophages, 208
fixation of virus, development of transformed cells after, 1255
flagellum of *Bacillus subtilis*, site for PBS1 adsorption 256
focus-forming titer, enhancement by diethyl-aminoethyl-dextran, 643
formamide, effect on capsid of adenovirus types 4 and 7, 1429
formamide, effect on virions and hemagglutinins of adenovirus 4 and 7, 1086
fowlpox infection, deoxyribonucleic acid synthesis during, 421
Friend virus, leukemogenic activity of, 365
Friend virus infection, interference in, 85
frog virus 3-infected cells, deoxyribonucleic acid synthesis in, 1006

β-galactosidase synthesis in *Escherichia coli*, inhibition of, 1400
gamma radiation, survival of vaccinia virus exposed to, 1102
genetic relatedness of adenovirus-associated viruses, 999
genomes, reovirus, transcription of, 289
group A arboviruses, interference among, 1783
growth characteristics, of chick embryo cells exposed to avian leukosis virus, 576
guanidine, in inhibition of Newcastle disease virus, 645

H-1 virus, effect of adenovirus on growth of, 155
hamster fibroblasts, polyoma-transformed, 69
hamster tumors, transplantable, virus associated with, 1115
heat inactivation accompanying virus replication, 275
HeLa cell protein synthesis, inhibition by vaccinia virion, 1028
HeLa cells, antigenic analysis of enterovirus receptors of, 813
hemadsorption of mumps virus, 494
hemagglutination of rabies virus, 1381
herpes simplex virus, chromosomal aberrations caused by, 1047
herpes simplex virus, electron microscopy, 507, 517, 1163, 1172
herpes simplex virus, high titer preparations, 83
herpes simplex virus, in cultures of mammalian nerve tissues, 621
herpes simplex virus, products in productive and abortive infection, 979
herpes simplex virus-infected cells, autoradiographic studies, 1047
herpes simplex virus infection, 384
herpesvirus, varicella-zoster, loss of infectivity, 1458
herpesvirus aggregate, form of, 78
herpesvirus associated with Burkitt tumor cells, 182
herpesvirus envelopment, 48
herpesvirus-type particles in Marek's disease, localization of, 1443
herpes virus-host cell relationships in nerve tissues, 621

histidine transducing fragment, in chromosome of *Staphylococcus aureus*, 652
homology, among cytoplasmic deoxyriboviruses, 1374
host-controlled restriction of T-even bacteriophages, 313, 320
host functions, bacteriophage-induced inhibition of, 327
human adenoviruses, replication at high temperature, 670
hybrid, transformation of kidney cells by, 173
hybrid of monkey and human adenoviruses, 488
Hydrogenomonas facilis, bacteriophage production by, 87
hydroxyurea, effect on herpes simplex virus, electron microscopy, 1163

inducible clones, heterogeneity of, 606
infection of protoplasts, conditions affecting, 686
infectious mononucleosis, relation to EB virus, 663
infectious virus, from cytoplasmic extract of productively infected cells, 979
infectious virus, from nucleus of productivity-infected cells, 979
influenza virus, infection in mice, 778
influenza virus, temperature variants of, 456
influenza virus entry, electron microscopy, 925
influenza virus-infected cells, ribonucleic acid polymerase activity in, 33
influenza virus-infected cells, ribonucleic acid synthesis in, 99
influenza virus neuraminidase, antibody response in man to, 761
influenza virus neuraminidase, antiserum specific for, 281
inhibition of host protein synthesis, in bacteriophage T4 infection, 1262
insects infected with wound tumor virus, 214
intercapsomer bonds, cleavage by formamide, in adenovirus virions, 1086
interference, among group A arboviruses, 1783
interferon, effect on arbovirus protein synthesis, 1081
interferon, effect on production of Semliki Forest virus proteins, 1081
interferon, in L cell destruction by Mengo virus, 567
interferon, interference in arboviruses without mediation of, 1783
interferon, production in mice by vesicular stomatitis virus, 1360
interferon, role in rubella virus interference, 955
interferon in L cells, effect on *p*H on protective action, 772
interferon synthesis, induction by double-stranded polynucleotides, 648
interferon synthesis, relation to abortive replication of Newcastle disease virus, 81
intracellular deoxyribonucleic acid, forms associated with M-13 infection, 1296
intracellular ribonucleic acid, specific for murine sarcoma-leukemia complex, 1346
intracisternal particles, 238
iridescent virus, *Tipula*, physicochemical properties, 738
isolation of virus, from *Rana pipiens*, 629

L cells, abortive replication of Newcastle disease virus in, 81
L cells, interferon in, 772
L cells, mouse, mengovirus replication in, 461
L cells destruction by Mengo virus, 567
labile coat, role in noninfectivity of varicella-zoster virus, 1458
Lactobacillus plantarium, crystalline aggregate of a bacteriophage in, 1479
lambda bacteriophage mutants, deoxyribonucleic acid replication in, 118
leakage of ^{32}P, from *Escherichia coli* cells, bacteriophage-induced, 763
leukemogenic activity of murine leukemia virus, 365
leukocytes, effect on vaccinia virus replication, 787
leukocytes, role in viral infections, 440
lipoprotein-enveloped ribonucleic acid viruses, 1465
locus of bacteriophage P22, 992
lymphocystis disease virus, morphology and maturation of, 830
lymphocystis virus, ultrastructure of, 393
lymphocytic choriomeningitis virus, 161
lymphocytic choriomeningitis virus, electron microscopy, 1465
lymphoid tumors in chicks, 1443
lysogens, defective, from virus-transformed cultures, 1272
lysogeny, bacteriophage P22 necessary for, 992

macromolecular syntheses, alterations in equine abortion virus infection, 793
Maguari virus, mouse brains infected with, electron microscopy, 1315
mammalian cells transformed by sarcoma viruses, 224
Marek's disease-induced tumors, herpesvirus particles in, 1443
maturation defects, in temperature-sensitive sindbis virus mutants, 728
measles virus, oncogenic potential of, 543
membrane filters, sizing of viruses with, 21
mengovirus, destruction of L cells by, 567
mengovirus, replication in preinfected HeLa cells, 859
mengovirus replication, effect on host, 461
methionine deprivation in *Escherichia coli*, restriction of λ bacteriophage, 1368
1-methyl-3-nitro-1-nitrosoguanidine, mutagenic effect on coliphages, 901
mitomycin C technique, use in M-13 replication study, 1296
mitomycin C-treated *uvr*$^+$ cells, phage production, 655
monkey cell-adapting component, replication, 541
mononucleosis, infectious, EB virus in cultures, 663
morphogeneis of rabies virus, 1191
morphogenesis of vesicular stomatitis virus, electron microscopy, 1154
morphological transformation of avian leukosis-sarcoma virus-infected cells, 1133
morphology of adenovirus types 4 and 7, effect of formamide, 1429
morphology of rubella virus, electron microscopy, 1223
mouse leukemia viral ribonucleic acid, cellular origin of, 1241

mumps virus, hemadsorption of, 494
murine cytomegalovirus, enhancement of infectivity, 853
murine erythroblastosis virus, ribonucleic acid from, 1241
murine leukemia virus, leukemogenic activity of, 365
murine sarcoma-leukemia virus complex, characterization, 1346
murine sarcoma virus, effect of diethylaminoethyl-dextran on focus-forming titer, 643
murine sarcoma virus, mammalian cells transformed by, 224
murine sarcoma virus, transformation by, 1255
murine sarcoma virus particles, properties, 865
mutagen for arboviruses, 5-azacytidine, 1228
mutagenic agents of tobacco mosaic virus, 966
mutants, bacteriophage-resistant, effect of trypsin, 1485
mutants, tryptophan synthase, of *Escherichia coli*, 905
Mycobacterium smegmatis, infection with phage deoxyribonucleic acid, 110

nerve tissues, mammalian, herpes simplex virus replication in, 621
neuraminidase, influenza virus, antiserum specific for, 281
neuraminidase of influenza virus, antibody response in man to, 761
neuraminidase, specific immunity to, protective effects of, 778
neutral red, effect on plaque formation, 178
Newcastle disease virus, abortive replication in L cells, 81
Newcastle disease virus, inhibition of host cell by, 1
Newcastle disease virus, inhibitory effect of poliovirus on growth, 645
Newcastle disease virus, virulence for chickens, 40
Newcastle disease virus nucleocapsid, 248
nitrous acid, as mutagenic agent of the tobacco mosaic virus, 966
Novikoff rat hepatoma cells, mengovirus replication in, 461
nucleases, T-even-induced, relation to bacteriophage restriction, 313, 320
nucleocapsid, isolation from purified rabies virus, 1191
nucleocapsid of Newcastle disease virus, 248
nucleotide phosphohydrolase in vaccinia virus, 167

oncogenic potential of measles virus, 543
osmotic pressure, effect on Sindbis virus growth, 759

parainfluenza virus, electron microscopy of entry, 1122
*p*H, influence on resistance to vesicular stomatitis virus, 772
phage particles in *Lactobacillus plantarium*, crystalline arrays, 1479
phage ϕX174 production, stimulation by caffein, 655
phospholipid in bacteriophage PM2, origin of, 1235
phospholipid synthesis, in T4-infected *Escherichia coli*, 594
photoreactivation of pseudorabies virus, 474
photosynthesis of *Plectonema*, effect of cyanophage infection on, 695
phytohemagglutinin-treated blood leukocytes, vaccinia virus replication in, 787
phytohemagglutinin-treated lymphocytes, as virus host, 440
plant virus, transmission by aphids, scanning microscopy, 745
plants infected with wound tumor virus, 214
plaque formation, effect of neutral red on, 178
plaque-formation, effect of ultraviolet irradiation on SA7 capacity for, 641
plaque size, relationship to virulence, 40
plaques, enhancement by cationic polymers, 267
Plectonema, CO_2 photoassimilation after cyanophage infection, 695
poliovirus, inhibitory to growth of Newcastle disease virus, 645
poliovirus, temperature-sensitive, 415
poliovirus, biophysical studies on, 149
poliovirus-preinfected HeLa cells, mengovirus replication in, 859
polyacrylamide gel electrophoresis, separation of viral genome segments by, 986
polyacrylic acid, antiviral activity, 878, 886
polyhedrosis virus, double-stranded ribonucleic acid from, 1211
polymerase activity, ribonucleic acid, poxvirus-induced, 1363
polymethacrylic acid, antiviral activity, 878, 886
polynucleotides, double-stranded, induction of interferon synthesis, 648
polyoma-transformed BHK21/13 hamster fibroblasts, 69
polypeptide components in bacteriophage T2L contractile sheaths, 308
poultry disease, electron microscopy, 1443
poxvirus-induced ribonucleic acid polymerase, 1363
poxvirus infection, effect on host deoxyribonucleic acid synthesis, 401
prophage, integration in a recombination-deficient strain, 702
prophage W, effect on bacteriophage T2 and T4 propagation, 1339
protein synthesis, HeLa cell, inhibition by vaccinia virion, 1028
protein synthesis, inhibition of, during bacteriophage T4 infection, 1262
protein synthesis, sequential, after vaccinia virus infection, 1016
protein synthesis directed by arbovirus, 26
protein synthesis in host cells, Newcastle disease virus inhibition, 1
proteins, adenovirus, role in host biosynthetic functions, 430
proteins, structural, of reoviruses, 1353
proteins, structural, of vaccinia virus, 449
proteins of an arbovirus, structural and nonstructural, 1076
pseudomonads, bacteriophages attacking, 357
Pseudomonas bacteriophage CB3, cold-sensitive restriction, 1393
Pseudomonas bacteriophages, 208
Pseudomonas BAL-31, PM2 infection of, 1235
pseudorabies virus, photoreactivation of, 474

rabies virus, hemagglutination of, 1381
rabies virus, morphology of nucleoprotein component, 1191
rabies virus, purification of, in tissue culture, 836
radiobiological effects on vesicular stomatitis virus, 1147
Rana pipiens kidneys, virus isolation from, 629
renal adenocarcinoma, virus isolation from *Rana pipiens* with, 629
reovirus genome segments, separation by polyacrylamide gel electrophoresis, 986
reovirus genomes, transcription of, 289
reovirus-induced ribonucleic acid polymerase, 869
reoviruses, structural proteins of, 1353
replication, of Western equine encephalomyelitis virus, 558
replication, virus, relation to heat inactivation, 275
replication of coliphage M-13, 1290, 1296, 1308
replication of human adenoviruses and simian papovavirus, 670
replication of mengovirus in preinfected HeLa cells, 859
replication of T4rII bacteriophage, 298
replicative intermediate, in Semliki Forest virus infection, 547
restriction of bacteriophage CB3 growth on *Pseudomonas aeruginosa*, 1393
rhinovirus, biophysical studies on, 149
rhinoviruses, biophysical studies of, 937
ribonucleic acid, double-stranded segments from reovirus serotypes, resolution of, 986
ribonucleic acid, in Semliki Forest virus-infected cells, 547
ribonucleic acid, mouse leukemia viral, in intact virus particles, 1241
ribonucleic acid bacteriophage R23, inhibition o β-galactosidase synthesis in *Escherichia coli*, 1400
ribonucleic acid in Western equine encephalomyelitis virus-infected cells, 558
ribonucleic acid polymerase, poxvirus-induced, 1363
ribonucleic acid polymerase, reovirus-induced, 869
ribonucleic acid polymerase, vaccinia virus deoxyribonucleic acid-dependent, 894
ribonucleic acid polymerase activity in influenza virus-infected cells, 33
ribonucleic acid replication in bacteriophage, 129
ribonucleic acid synthesis, Newcastle disease virus inhibition, 1
ribonucleic acid synthesis, viral, role of type I cytopathic vacuoles, 1362
ribonucleic acid synthesis, virus-specific, 461
ribonucleic acid synthesis, virus-specific, in human adenovirus type 12 infection, 1055
ribonucleic acid synthesis in cells infected with influenza virus, 99
ribonucleic acid synthesis in *Escherichia coli*, 124
ribonucleoprotein, viral morphology of, 149
Rous sarcoma virus, mammalian cells transformed by, 224
Rous sarcoma virus, Sendai virus-mediated rescue of, 951
rubella virus, density gradient centrifugation of, 409
rubella virus in BHK-21 cells, electron microscopy of, 1223
rubella virus interference, role of interferon in, 955

St. Louis arbovirus plaque formation, 178
Salmonella typhimurium, lysogeny of phage P22 v_1 in, 992
scanning microscopy, in study of plant virus transmission, 745
Semliki Forest virus, effect on cell protein synthesis, 1076, 1081
Semliki Forest virus, replicative intermediate, 547
Semliki Forest virus infection, cytoplasmic structures associated with, 1362
Sendai virus, electron microscopy of entry, 1122
Sendai virus, infective substructures, from Ehrlich ascites cells, 752
Sendai virus-mediated rescue of Rous sarcoma virus, 951
sequential protein synthesis, after vaccinia virus infection, 1016
sheaths, contractile, of bacteriophage T2L, 308
Shigella dysenteriae, bacteriophage P1 mutants, multiplication, 1408
Shigella sonnei, abortive infection by coliphage T7, 335
Shigella sonnei, T-related bacteriophages from, 692
Shope fibroma virus-infected cells, deoxyribonucleic acid synthesis in, 1418
simian adenovirus SA7, transforming and plaque-forming capacity of, 641
simian papovavirus, replication at high temperature, 670
simian virus 40, defective, replication, 541
sindbis virus, defects in temperature-sensitive mutants, 728
simian virus 40, transformation of hamster kidney tissue by, 606
simian virus 40 infection, iododeoxyuridine in cellular deoxyribonucleic acid synthesized after, 723
simian virus 40-transformed mouse kidney cultures, defective lysogens, 1272
Sindbis virus, osmotic pressure effect on growth of, 759
Staphylococcus aureus, homogeneity in transducing fragment, 652
Streptomyces protoplasts, infection with phage deoxyribonucleic acid, 686
structure and development of viruses, electron microscopy, 1122
surfaces of cells, ultrastructure, after virus infection, 1133
synchronization of coliphage M-13 infection, 1290
synthesis, kinetics of virus, in equine abortion virus infection, 793
synthesis of cellular deoxyribonucleic acid, after simian virus 40 infection, 723

T7 bacteriophage deoxyribonucleic acid, intracellular fate of, 1230
T-related bacteriophages, from *Shigella sonnei*, 692
tail sheaths of bacteriophage T2L, polypeptides in, 308
target volume analysis of vaccinia virus, 1102

temperature-sensitive mutant of φX174, 822
temperature-sensitive poliovirus, rescue of, 415
temperature variants of influenza A2 viruses, 456
Tensaw virus, mouse brains infected with, electron microscopy, 1315
Tipula, iridescent virus, physicochemical properties, 738
tissue culture, purification of rabies virus from, 836
tobacco mosaic virus and its ribonucleic acid, mutagenic agent, 966
transcription of reovirus genomes, 289
transducing bacteriophage, for *Bacillus cereus*, 657
transducing bacteriophage, for *Bacterium anitratum*, 716
transducing phage, in *Staphylococcus aureus*, 652
transfection, by SP82 bacteriophage deoxyribonucleic acid, method, 710
transfection, competence for, 587
transformation, by simian adenovirus SA7, 641
transformation, competence for, 587
transformation by murine sarcoma virus, 1255
transformation of hamster embryo cells by adenovirus, 376
transformation of kidney cells by virus hybrid, 173
transformed cell lines, ultraviolet-irradiated SV40, 1272
transplantable hamster tumors, virus associated with, 1115
trypsin, effect on bacteriophage yield, 1485
trypsin, isolation of bacteriophage-resistant mutants, 1485
tryptophan mutations in *Escherichia coli*, 905
tumor cells, virus associated with, 182
tumors in fish, lymphocystis disease virus, causative agent of, 830
tumorlike antigen induced by type 12 adenovirus, 7, 15
type C murine leukemia virus, 1115

ultrastructure of cells infected with bacteriophage PM2, 56
ultrastructure of lymphocystis virus, 393
ultraviolet irradiation, effect on prophage induction, 702
ultraviolet irradiation, effect on transforming capacity of SA7, 641

vaccinia-infected cells, antigens of, 449
vaccinia virion, effect on HeLa cell protein synthesis, 1028
vaccinia virus, initiation of infection, 678
vaccinia virus, nucleotide phosphohydrolase in, 167
vaccinia virus, target volume analysis of, 1102
vaccinia virus deoxyribonucleic acid-dependent ribonucleic acid polymerase synthesis, 894
vaccinia virus infection, effect on sequential protein synthesis, 1016
vaccinia virus replication, effect of leukocytes on, 787
variants of influenza A2 viruses, 456
varicella-zoster virus, cell-free, noninfectious, 1458
Vero cells, defective in interferon production, 955
vesicular stomatitis virus, effects of X-irradiated aqueous solutions on, 1147
vesicular stomatitis virus, interferon production in mice by, 1360
vesicular stomatitis virus, lymphocytes as hosts for, 440
vesicular stomatitis virus, morphogenesis, electron microscopy, 1154
viral deoxyribonucleic acid, from herpes simplex virus-infected cells, 979
viral genome, persistence in adenovirus type-12-infected cells, 918
viral genome, role in HeLa cell protein synthesis, 1028
viral inactivation by disulfide bond reducing agents, 1482
viral maturation, defects in, 728
virulence, relationship to plaque size, 40
virus entry, influenza, 925
virus envelopment, failure as cause of abortive infection, 384
virus-receptor, interaction in an adenovirus system, 1064
virus recovery, from transformed cells, 606
virus size, determination with membrane filters, 21

Western equine encephalomyelitis virus, replication of, 558, 1038
wound tumor virus, infection of insects and plants with, 214

X-irradiation, effects on vesicular stomatitis virus, 1147

zonal centrifuge technology, for study of rhinoviruses, 937